These accounts no doubt refer to the same meteor as that observed at Hardwick. WILLIAM F. DENNING

Tyndale House, Ashley Down, Bristol, Jan. 8

Blowpipe Analysis

MAJOR ROSS (NATURE, vol. xiii. p. 186) does not appear to have thought of the impurities his soda might contain in his test for the presence of a sulphide. Had he done so he would probably have remembered that all soda (unless specially prepared from sodium) contains traces of iron. This iron, on fusing with the sulphide, forms ferrous sulphide, which, as is well known, is soluble in fused sodium sulphide; and on adding water to the fused mass a black residue of ferrous sulphide remains behind.

Again, he says "there can be no room to precipitate anything in a drop of water;" but surely this is erroneous. It is only a question of degree. Under the same circumstances a precipitate would be as certainly formed in a drop of water as in a gallon.

If Major Ross were to make allowances for the ordinary impurities of commercial reagents, a little more confidence might be placed in his tests. T. S. HUMPIDGE

Marine Aquaria

WHILE reading Mr. Wills's very suggestive article on Marine Aquaria in your last issue, the following question suggested itself to me:—Does not the "larger proportion of carbonic acid in the lowest depths of the ocean" explain, at any rate partially, the formation of the "abyssal red clay," which Prof. Wyville Thomson has proved to occupy so large a portion of the bed of the Atlantic?

"Many of the insoluble carbonates, and in particular those of lime, magnesia, &c., may be dissolved to some extent by water, charged with carbonic acid, and are deposited in a crystalline form, as the gas slowly escapes from the fluid." (Miller's "Chemistry.")

That the presence of carbonic acid in the deep water is *one* cause of the decomposition of the shells of Mollusca, &c., I think that there can hardly be a doubt. Whether it is sufficient by itself to account for the whole phenomenon, I cannot presume to decide. H J. M'G.

Bournemouth, Jan. 10

The Glow-worm in Scotland

MR. J. SHAW'S interesting note on the Glow-worm leads me to remark that it is common about Loch Lomond, and recalls the pleasant surprise with which I met one there, shining brilliantly by the wayside, so late as twelve o'clock on a dark midsummer's night. WM. MCLAURIN

London, Jan. 10

Bryant and May's Safety Matches

THESE matches are highly electrical, and if they be rubbed against glass and ebonite they ignite, especially if the electrics be dry and warm. How far their ready ignition on amorphous phosphorus is due to chemism or to electricity remains to be proved. I am sorry I have not the opportunity just now to test this point. W. H. PREECE

OUR ASTRONOMICAL COLUMN

THE MINOR PLANET, No. 153.—This planet, discovered by Palisa at Pola on Nov. 2, 1875, and which has been named *Hilda* by Prof. Oppölzer, is found to have a period of revolution considerably longer than any other member of the group. In No. 39 of Prof. Tietjen's "Berlin Circular" is an orbit calculated by Dr. Schmidt, which represents closely the observations to the end of the year. It is as follows:—

Epoch 1875, Nov. 22, at Berlin midnight.

Mean anomaly	108° 30′ 11″	
Longitude of perihelion ...	284 41 50	1875·0
Longitude of ascending node	228 20 43	
Inclination to ecliptic ...	7 44 52	
Angle of excentricity ...	8 33 3	
Mean diurnal motion ...	452″·421	

The major semi-axis is 3·9474, and if we calculate the distance of the comet from the orbit of Jupiter at the aphelion passage, we find it 0·864, the earth's mean distance from the sun being taken for unity, which is a much closer approach to Jupiter's path than occurs with any other of the minors. Themis, for instance, the motion of which was investigated by Dr. Krueger, for determination of the mass of Jupiter, does not approach that planet within about 1·5. More than one of the small planets with the longer periods have large heliocentric latitude at the aphelion point, and do not on that account approach so near to the orbit of Jupiter as others with shorter periods and somewhat greater excentricities, and having the lines of nodes and apsides less divergent. Cybele in aphelion is 1·31 from the orbit of the great planet, Freia 1·24, and Camilla, according to the rather uncertain orbits yet available, 1·36. Hence, as suggested by Palisa, his planet Hilda is well situated for further investigation on the mass of Jupiter by the perturbations of the minor planets; it is well known, however, that this important element in the solar system is now reduced within narrow limits of uncertainty.

The above orbit of Hilda is confirmed by another computed by Herr Kühnert of Vienna from a similar extent of observations. The period of revolution is about 2,865 days, or approaching eight years, contrasting strikingly with the period of Flora, which is only 1,193 days, or a little over 3¼ years.

SATELLITES OF URANUS.—The following positions of the brighter satellites of Uranus are derived as before from Newcomb's Tables in the Appendix to the Washington Observations for 1873; they are for 11h. 30m. P.M. Greenwich time:—

	Titania.		Oberon.	
	Angle.	Dist.	Angle.	Dist.
	°	″	°	″
Jan. 15 ...	23·2 ...	31·1 ...	66·5 ...	23·8
„ 16 ...	3·4 ...	34·6 ...	34·9 ...	35·0
„ 17 ...	347·7 ...	43·1 ...	18·5 ...	44·0
„ 18 ...	268·7 ...	15·8 ...	6·1 ...	46·1
„ 19 ...	212·5 ...	27·2 ...	352·6 ...	40·5
„ 20 ...	190·1 ...	34·6 ...	331·2 ...	29·5
„ 21 ...	169·1 ...	28·9 ...	286·7 ...	21·1
„ 22 ...	120·1 ...	16·5 ...	235·4 ...	26·5
„ 23 ...	45·4 ...	22·4 ...	209·7 ...	37·9
„ 24 ...	16·9 ...	33·4 ...	195·0 ...	45·3
„ 25 ...	357·5 ...	32·1 ...	182·7 ...	45·3
„ 26 ...	324·2 ...	20·2 ...	168·0 ...	37·8
„ 27 ...	245·2 ...	18·0 ...	142·2 ...	26·5
„ 28 ...	202·6 ...	30·5 ...	90·8 ...	21·1

THE GREAT COMETS OF 1874 AND 1680.—Now that the orbit of the fine comet of 1874 (Coggia, April 17), determined from the observations in the northern hemisphere to the middle of July, has been shown by the southern observations extending to October, to require but small corrections, we may examine with confidence the path of the comet about the passage of the descending node, when it approached near to the orbit of Venus.

Employing the elements calculated by Dr. Geelmuyden, of the Observatory, Christiania, we have the following results:—

Heliocentric Ecliptic Longitude.	Heliocentric South Latitude.	Distance of Comet from Orbit of Venus.
299° 45′	2° 17′ 48″	0·003655
299 48	2 24 38	0·003181
299 51	2 31 29	0·003323
300 0	2 51 58	0·006372

Therefore, assuming the solar parallax 8″·875, with Clarke's semi-diameter of the earth's equator, the least distance of the comet from the orbit of Venus is found to have been 293,000 miles, or only about one-fourth greater than the distance of the moon from the earth.

A very celebrated comet, that of 1680, approached the earth's orbit within even less than this distance. From the definitive elements of Encke it would appear that in 92° 3′·5 heliocentric longitude, just before traversing the plane of the ecliptic, towards the south, the comet's dis-

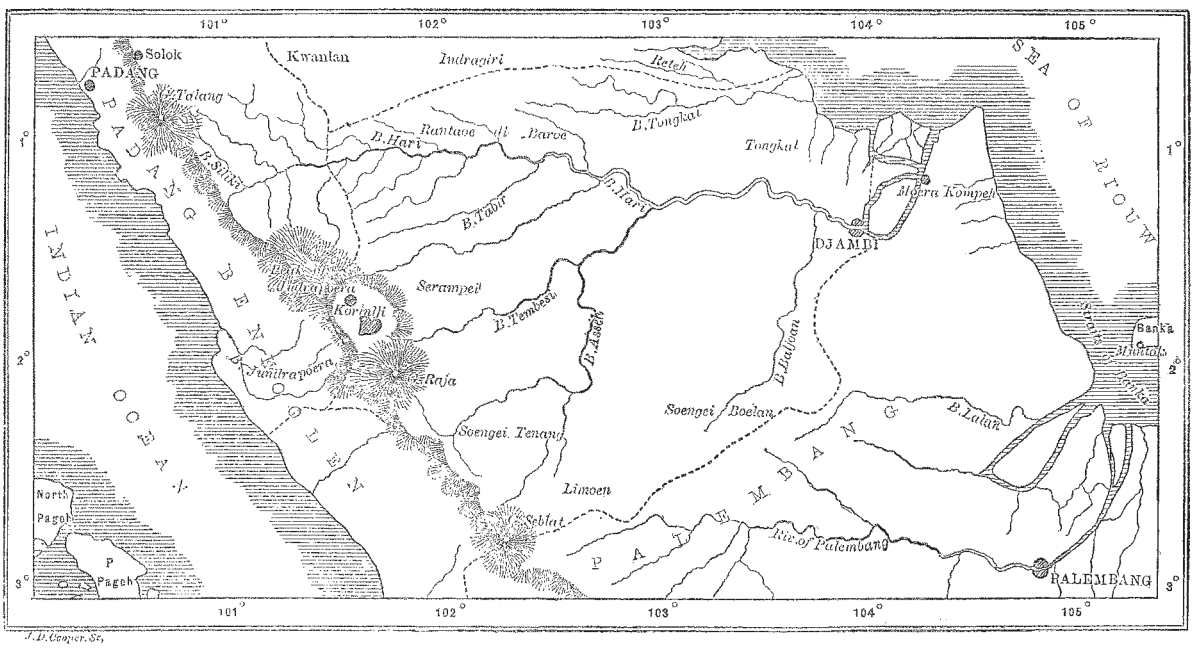
tance from our track was 0·0031, or 286,000 miles, but the earth at the time was in another part of her orbit and far away from the comet, which indeed never approached our globe within 0·42 of the earth's mean distance from the sun. To have brought the two bodies into their closest possible proximity in 1680, it would have been necessary that the comet should have arrived at perihelion at midnight on the 18th of January, 1681, in which case they would have met on the night of December 22.

No comet is yet certainly known to have been situate nearer to the earth than 1,390,000 miles, which was the distance of Lexell's comet of 1770, on July 1, at 5 P.M. G.M.T.

AN EXPLORING EXPEDITION TO THE INTERIOR OF SUMATRA

ONLY a short time ago the Geographical Society of Amsterdam took the first preliminary steps towards the realisation of a long-cherished idea,—the exploration of those parts of Sumatra which have hitherto been indicated by white patches on our maps of that island, even though they form part of the colonial territory. These regions are bounded to the south by the residencies of Palembang and Bencoolen, to the east by the Straits of Banka and the Sea of Riouw, and to the west by the highlands of Padang and the chain of volcanic mountains which traverses the island in its whole length, running parallel to the coast. All the above-named districts are tolerably well known, the native kingdoms of Reteh, Indragiri, and Kwantan, situated farther north, perhaps excepted. It is this white patch, better known under the name of the Djambi territory, which the expedition will choose for the special object of its researches.

For more than one reason this and no other part of the interesting island has been chosen. In the north the war with Atchin is for the present an impediment to a peaceful party of explorers, although a better acquaintance with those tribes of the Malayan race known as the Battaks would be highly interesting from a linguistic and ethnological point of view. This having to be given up, the question of the navigability of the Djambi River, which might, moreover, prove of so much importance on commercial grounds, induced the Geographical Society definitely to fix its choice on the indicated parts, rather than on Indragiri, Reteh, or any of the above-named districts.



A. D. Cooper, Sc.

The only European who has ever visited the domains of the Sultan of Djambi, and has left any official documents about the state of things as he found them, was the Palembang resident van Ophuyzen, who, in 1869, travelled a good way up the Djambi River, with the Government steamer *Boni*. Unfortunately, he was obliged to return sooner than he wished, for reasons dictated neither by the hostility of the population, nor by the barrenness of the country; on the contrary, he has reported very favourably on both these points. He had, moreover, occasion to notice the existence of several important tributary rivers, and as far as his survey extended he found the Djambi itself everywhere navigable. His reports to the Government at Batavia have formed a valuable basis upon which the Geographical Society has drawn up its projects for the present expedition.

The body of explorers will begin by separating into two parties, one of which will ascend the river in a steamer which it is expected Government will place at their disposal, the other party starting from Padang and passing the mountain chain above-mentioned somewhere between the volcanoes of Talang and Indrapoora, will try to follow the course of one or more of the Djambi tributaries—more especially the Batang Hari—from its source up to the point where they will meet the steamer with the rest of the explorers, who will have in the meantime ascended the river as far as possible.

This junction having been effected, the next task will be the detailed survey of the different courses of the Sangit, the Teboo, the Tabir, and the Tembesi, the party all the while slowly advancing towards those mysterious valleys in the interior of Korintji, Assei, &c., which have afforded so much matter for speculation, and about the beauty and fertility of which most wonderful accounts have long been circulated. For the only reliable data we possess, we are indebted to natives who have travelled to the coast for commercial purposes, information which cannot but be very imperfect. Unacquainted with the disposition of the inhabitants towards European intruders, our travellers will have to feel their way, using the utmost circumspection not to rouse the distrust of the population, which would undoubtedly be the case if Government was directly associated with the expedition. The natives would not fail to